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New records of *Pristimantis carranguerorum* (Anura: Craugastoridae) from the Cordillera Oriental of Colombia

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Abstract. *Pristimantis carranguerorum* (Lynch, 1994) is a poorly-known species of frog, endemic to the eastern slopes of the Cordillera Oriental of Colombia, which is known only from a few localities in the Boyacá and Casanare departments. Herein, we provide the first records of this species from Cundinamarca Department; these are the southernmost and highest altitude records for this species. We summarize the distribution of this species based on all known records and including additional unreported localities from Boyacá and Cundinamarca departments.

Key words. Terrarana; direct-developing frogs; range extension; endemism; Cundinamarca

Pristimantis carrangerorum (Lynch, 1994) is a species of direct-developing frog endemic to Colombia. It is categorized as Vulnerable by the Red Book of Colombian Amphibians (Renjifo 2004) and as Data Deficient by the IUCN Red List (Castro et al. 2004). This species was described by Lynch (1994) and assigned to the "*Eleutherodactylus*" (now genus *Pristimantis*) *conspicillatus* species group, in which it has remained to date. Currently, *P. carrangerorum* is known from its original description (Lynch 1994), an account in the Red Book of Colombian Amphibians (Renijfo 2004), and its inclusion in several regional and national checklists (e.g., Acosta-Galvis 2000, Bernal & Lynch 2008, Acosta-Galvis & Alfaro-Bejarano 2011). *Pristimantis carrangerorum* has not been included in any of the published phylogenies of the genus (e.g., Hedges et al. 2008, Pinto-Sánchez et al. 2012, Padial et al. 2014).

Pristimantis carranguerorum was described based on specimens from several sites between 1350–2060 m above sea level (a.s.l.) in Pajarito Municipality, Boyacá Department, all located on the eastern flank of the Cordillera Oriental of Colombia. Acosta-Galvis & Cuentas (2016) provided a distribution map incorporating several new localities in Boyacá Department, north of the type locality, but without providing any supporting evidence of these new records. In 2011, this species was reported for the first time from Casanare Department by Acosta-Galvis & Alfaro-Bejarano (2011), although they also did not specify localities or vouchers that support this range extension. Later, Pedroza-Banda et al. (2014) reported this species based on 1 specimen collected in Aguazul municipality, Casanare Department, at 738 m a.s.l., which is the lowest known record of the species.

Between late January and early February 2016, we recorded *P. carranguerorum* at 3 localities during a field trip conducted at Vereda San Antonio, Junín municipality, Cundinamarca Department, between 2650–2802 m a.s.l. (Finca La Cabaña: 04°45′14.5″ N, 073°39′52.3″ W; Finca El Páramo: 04°45′29.9″ N, 073°40′11.9″ W; and Finca Peña Colorada: 04°44′43.2″ N, 073°39′49″ W; Table 1). Fourteen specimens were found near rivulets covered by small remnants of gallery forest. Individuals were found during the day on the leaf litter of forest, whereas at night, specimens were found on leaves at 5–45 cm above the ground. The specimens were collected with the authorization of Autoridad Nacional de Licencias Ambientales (ANLA), Ministerio de Ambiente of Colombia, resolution number 0315, 29 March 2016. These specimens were deposited in the collection of the Laboratorio de Anfibios, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, Colombia (ICN) (ICN 55896–55909).

Additionally, 23 specimens of *P. carranguerorum* collected at 5 previously unreported localities in Boyacá and Cundinamarca departments (Table 1, Fig. 1) were also found in ICN.

The specimens reported in this work are identified as *P. carranguerorum* by the following external morphological characters (Lynch 1994): venter nearly smooth to weakly areolate, short dorsolateral folds in scapular region, snout obtuse in dorsal view and rounded in lateral view (Fig. 2; ICN 55897), distinct tubercles on the eyelid absent (Fig. 2) (except in a few juveniles from Junín municipality, Finger I slightly shorter than Finger II, enlarged discs on the Fingers III–IV, fingers and toes with fleshy lateral keels, absence of ulnar tubercles, small non-conical tubercles on heel (Fig. 2), short inner tarsal fold, and a short Toe V that does not reach the distal subarticular

Table 1. List of all known specimens of *Pristimantis carranguerorum* (Lynch, 1994) separated by locality. All vouchers are deposited in the ICN collection, including the uncatalogued specimen with field number TAS (Teddy Angarita-Sierra) 894.

Locality no. (in map)	Museum voucher	Department	Municipality	Latitude (N)	Longitude (W)	Elevation (m)	Source
1	ICN 5345-9, 5251-60, 5361-3	Boyacá	Pajarito	05°26′35″	072°43′43″	1600	Lynch 1994
2	ICN 5128, 5130, 5132, 5135, 5139, 5145, 5351-7, 5360-1	Boyacá	Pajarito	05°24′30.0″	072°43′06.8″	1600	Lynch 1994
3	ICN 5601-3, 7166-71	Boyacá	Pajarito	05°25′54″	072°42′09″	2015–2060	Lynch 1994
4	ICN 9402-32, 9439-9468, 9470	Boyacá	Pajarito	05°17′00″	072°42′00″	1600–1650	Lynch 1994
5	ICN 9433-7	Boyacá	Pajarito	05°17′38.4″	072°42′21.6″	1600	Lynch 1994
6	ICN 44956-7, 44966, 44975, 44977, 44981,44983, 44985-6, 44995, 45005, 45009	Boyacá	Santa María	04°53′38.8″	073°16′56.5″	1080–1180	This work
7	ICN 44959, 44989-90, 45013-5, 45024, 45137	Boyacá	Santa María	04°53′37.9″	073°14′57.1″	1200–1380	This work
8	ICN 45139	Boyacá	Santa María	04°50′53.7″	073°16′20.7″	900	This work
9	ICN (TAS 894)	Casanare	Aguazul	05°14′01.6″	072°40′17.9″	738	Pedroza-Banda et al. 2014
10	ICN 40931	Cundinamarca	Ubalá	04°45′19″	073°21′10″	1500	This work
11	ICN 40978	Cundinamarca	Ubalá	04°42′16.5″	073°21′52.5″	1000	This work
12	ICN 55905-9	Cundinamarca	Junín	04°45′14.5″	073°39′52.3″	2650	This work
13	ICN 55899-904	Cundinamarca	Junín	04°45′29.9″	073°40′11.9″	2688	This work
14	ICN 55896-8	Cundinamarca	Junín	04°44′43.2″	073°39′49.4″	2802	This work

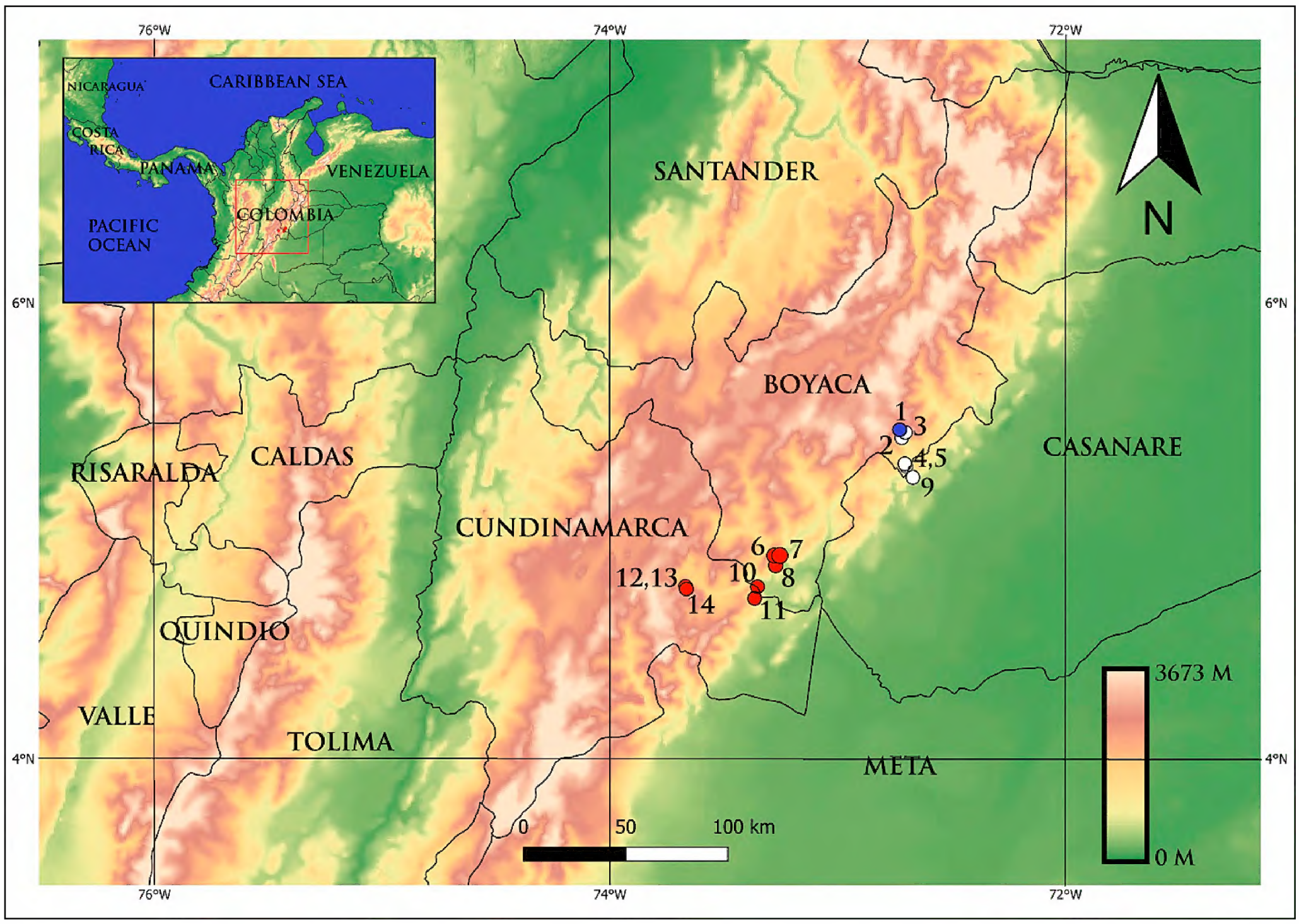

Figure 1. Distribution map of *Pristimantis carranguerorum*. Red dots correspond to the new localities reported by the present work, white dots refer to the literature records, and the blue dot to the type locality. Each number corresponds to one of the localities referred to in Table 1. The inset map indicates the location of the data points in northwestern South America. The datum used in this map is WGS84.

tubercle of Toe IV.

Coloration of all the specimens reported herein is also similar to the type series of *P. carranguerorum*. The specimens have gray to brown dorsum with darker markings, including dark brown labial and oblique limb bars, as well as a canthal and a supratympanic stripe (Fig. 2). The specimens from Junín municipality and the type locality have a copper iris in life with brown reticle (Fig. 2; Lynch 1994), but the color of the iris from the other known specimens is unknown, as this coloration did not persist after preservation. The Junín vouchers are unusual as they have pale spots in the posterior part of the thighs, whereas the specimens of Santa María municipality

Figure 2. A juvenile female of *Pristimantis carranguerorum* from Junín, Cundinamarca (ICN 55897) with snout–vent length (SVL) of 16.8 mm.

have a cream coloration in the posterior part of the thigh with brown stippling. These coloration patterns are different from the other known specimens of *P. carranguerorum* in which the posterior part of the thighs is uniform brown (Lynch 1994). Furthermore, Junín specimens have dark brown spots on their venter, which were generally much more numerous in the throat. Some specimens, specifically ICN 55901–2, 55905–7, and 55909, have a brown throat with pale mottling, in contrast to the stippled venter (although also with a more heavily marked throat) found in Santa María specimens, as well as in the type series (according to Lynch 1994).

The identification of most of the specimens reported in this work was corroborated by John D. Lynch, Sandy B. Arroyo, and Gustavo González, experts on the taxonomy of the genus *Pristimantis* of Colombia. Additionally, all the newly-reported specimens were compared directly with the type series of *P. carranguerorum*.

The newly collected specimens of *P. carranguerorum* from Vereda San Antonio, Junín municipality, represent the first record of this species in the Cundinamarca Department and an extension to the distribution by ca. 120 km (in straight line) to the south (Fig. 1). This new locality also extends 742 m higher the altitudinal range of *P. carranguerorum*, from 2060 m to 2802 m a.s.l. Also, the previously unreported specimens provide additional records from Cundinamarca and Boyacá departments and fill the gap between the distribution of this species as previously known.

Although Lynch (1994) suggested that the range of *P. carranguerorum* extends to the north of the type locality (Pajarito, Boyacá), the new records reported herein show that the range of the species comprises the eastern slope of the Cordillera Oriental to the south of Pajarito municipality, in Cundinamarca, Boyacá and Casanare departments, between 738 and 2802 m a.s.l. This latitudinal range is also exhibited by *Pristimantis medemi* (Lynch, 1994) and *P. savagei* (Pyburn & Lynch, 1981) (Malambo-L. & Marín-V. 2006, Acosta-Galvis 2015, Frost 2016), 2 species morphologically very similar to *P. carranguerorum* (Lynch 1994). However, at the present time it is unknown if the distribution of any of these 3 species extends north of Pajarito due to the apparent absence of collections undertaken on those areas (pers. obs.). Thus, further studies are needed for a better understanding of the distribution of *P. carranguerorum*, as well as for researching other aspects of its biology that remain poorly known, such as its microhabitat use, call, diet, reproduction patterns, and phylogenetic relationships. Additionally, the conservation status of this species needs to be re-evaluated, given that the records presented in this publication extend considerably its known range.

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